THE VETERINARY JOURNAL

Editor :
T. DALLING, M.A., M.R.C.V.S.

Sub-Editor :
PROFESSOR J. McCUNN, M.R.C.V.S., M.R.C.S., L.R.C.P.,
Professor of Anatomy, The Royal Veterinary College.

JUNE, 1943

EDITORIAL

NEW TREATMENTS

WE invite our readers' attention to the article on Veterinary Jurisprudence, the first part of which was published in May issue of the VETERINARY JOURNAL. The author draws attention to the risk a veterinary surgeon may run in the application of a new treatment but also quotes from what has been laid down in a court. Included in the quotation is the phrase: "but the client is entitled to the benefit of the increased knowledge of the day. The standard of ordinary skill is on the advance; and he who would not be found wanting must apply himself with all diligence to the most accredited sources of knowledge." This raises the question of the sources of new knowledge and the evidence which must be forthcoming before any new method of treatment or control of diseases of livestock can be accepted as beneficial. It is not sufficient to accept that a new drug or new biological product will prove of value in the cure or prevention of any special disease simply because a few tests have been carried out in a laboratory. While such tests must of necessity be the basis on which further experimental work is carried out, there is still much more evidence required before the product is recommended for general use. In the laboratory, the research worker using the methods at his disposal, various *in vitro* tests and *in vivo* experiments on small laboratory animals and a very limited number of larger animals, may come to the conclusion that he has now enough evidence to warrant the publication of his results. This stage, however, does not merit the general adoption of the treatment: it is now necessary to carry out further observations on animals under the treatment in the field. It is only by such field observations that a true value can be placed on the method and that its advantages and limitations can be assessed. It would not be difficult to quote examples of treatments which have been widely advocated and which have soon passed out of practical use. In order that the veterinary profession may practise the best methods of treatment it is essential that they be thoroughly applied in the field before they are brought into general use. While we must keep up to date in our methods of control of diseases of livestock we must at the same time safeguard ourselves and our clients by convincing ourselves that the evidence of the beneficial use of the treatment is good and that there is every likelihood of its use being of real value.

General Articles

PROMANIDE (PROMIN) IN THE TREATMENT OF TUBERCULOSIS

By HAMILTON KIRK, M.R.C.V.S.

ONE of the most recent of the chemotherapeutic drugs has been developed in America by the Parke Davis Laboratories. In that country it is known as Promin, and is the sodium salt of p, p'-diamino diphenyl sulphone—N, N'-di-[dextrose sulphonate].

The therapeutic product, which contains a slight excess of dextrose, is available in capsules as an almost white to light yellow powder, or in ampoules as a clear light yellow 40 per cent. aqueous solution.* The product in either form has a characteristic bitter taste and the powder is readily soluble in water. Forty per cent. solutions are stable indefinitely and may be brought to a boil or autoclaved so long as they are allowed *to cool slowly*.

Comparatively large doses of Promanide have been given orally, intravenously and intramuscularly to dogs, rats, mice, chickens and pigeons, without untoward reactions. As a result of extensive animal toxicity studies in dogs over a period of several months with doses of 20-50 mg. per Kg. orally, or 50-100 m.g. per Kg. intravenously, it was concluded that Promanide exerts no effect on the hæmopoietic system and no effect on the gastro-intestinal or urinary tracts; yet in the human being oral administration tended to produce a somewhat severe hæmolytic anæmia which, to some extent, could be overcome by ferrous sulphate.

This, apparently, is one reason why the makers are chiefly interested in the topical application of the drug so far, at least, as the human patient is concerned; for as so applied it has been found to be *definitely lethal to the tubercle bacillus*.[1]

So far as the author has been able to ascertain, there has been no clinical experience of this drug in animals; but since its release for clinical evaluation in the human, approximately 6,000 doses have been given by oral or parenteral routes in the treatment of fifteen different diseases. As a result, Promanide has appeared to be as effective as sulphanilamide in one-third to one-fourth the dose in the treatment of disease caused by the pneumococcus, strepto. hæmolyticus, as well as some of the non-hæmolytic ærobic streptococci.

In the evaluation of any new chemotherapeutic substance particular attention to the number and severity of side reactions is of the utmost importance. In effective doses Promanide orally has been found to cause, in humans, the following symptoms in order of frequency: (1) Cyanosis, but without cardio-respiratory embarrassment. If followed by the ingestion of copious water, the severity of all reactions is lessened. (2) Headache. (3) Anæmia. Promanide, like all chemotherapeutic substances of the sulphanilamide type, causes some anæmia when given orally over an extended period of time.

To explain the lack of toxicity of the drug parenterally, the presumptive

*This is the form of supply to those undertaking experimental work and the reader must not conclude that such packings are yet available for purchase.

evidence now available would suggest that some toxic substance may be formed from sulphanilamide-type compounds in the gastro-intestinal tract of certain individuals and account for some of the side reactions seen clinically.

Fortunately, as already stated, these unwelcome reactions seem not to occur in the dog; but, as yet, no optimum therapeutic dose for this animal has been evolved.

Since the introduction of sulphonamides, there has been a widespread interest in the study of the blood concentration of the drug being used. In the writer's view, such interest is highly essential, since successful therapy depends so much upon rapidly attaining, and maintaining, a blood concentration of not less than 10 mg. per 100 c.c. (see THE VETERINARY JOURNAL, page 37).

Some clinicians have expressed doubt as to the real value of making these determinations in the case of Promanide, since therapeutic results have been obtained when the concentration ranged less than 1.0 mg. per cent. to 10 mg. per cent. and upwards.

Methods of estimation should, however, be uniform, and the writer suggests that readers might well adopt the Lovibond estimator as being one eminently suitable for the clinician, owing to its ease and simplicity. [This means of test is obtainable from the Tintometer Co., Salisbury.]

"The results obtained by Feldman, Hinshaw and Moses, of the Mayo Foundation[2] (1940, 41, 42), in the treatment of experimental T.B. in guinea-pigs by Promanide have aroused great interest both in America and in this country.

"Not only did the drug, given by mouth, prevent or limit the development of disease in animals inoculated with a virulent bacillary strain, when treatment was begun on the day of infection, but even when it was delayed for six weeks thereafter the effect was pronounced, and in some animals no tuberculous lesions were found at necropsy 192 days after inoculation.

"Feldman, Mann and Hinshaw (1942) have now repeated the experiments, but have proved by biopsy the presence of microscopic T.B. lesions in the livers of animals when treatment was started six weeks after infection; and again several treated animals showed no lesions at necropsy, at 224 days. While some factors involved in these results require further discussion they appear to be the most impressive yet reported in the chemo-therapy of tuberculosis in the guinea-pig.

"The guinea-pig tolerates a daily dosage, by mouth, of 300 to 400 mg. over long periods. In man, unfortunately, much lower dosage relative to weight may soon produce toxic effects, particularly hæmolytic anæmia. Trial treatment of pulmonary tuberculosis has been fairly extensive, though published results are yet scanty. But it appears that outstanding success has not been attained with any dosage which is well tolerated. . . .

"In America, Promanide has been applied locally in some cases of laryngeal or tracheo-bronchial tuberculosis, with good results. More recently we have heard that Dr. Allerton, of Torquay, has been applying the drug to superficial lesions with much success."[1]

Although success has not yet followed the administration of Promanide in the cure of generalised T.B., it is very encouraging and significant to know that the drug is lethal to the T.B. bacillus when it can be brought into contact. Already there are reports of cures, by local injection, for such lesions as caries

XUM

of bone, tuberculous sinuses and glands, lupus, etc., and it is not difficult to visualise the tremendous possibilities of this chemotherapy when toxicity has been overcome, probably in consequence of some slight modification of the chemical formula.

Although the canine species is only exceptionally involved, veterinary readers will at once turn their thoughts to the question of tuberculous udder of the cow by topical application, and what might one day be possible of achievement in its eradication.

REFERENCES

(1) Tytler, W. H., and Lapp, A. D.: "Treatment of Superficial Tuberculous Lesions by Local Application of Promin." *Brit. Med. Jnl.* December 26, 1942. Vol. ii, p. 748.
(2) Feldman, W. H., Hinshaw, H. C., and Moses, H. E.: "Treatment of Experimental Tuberculosis." *Jnl. Am. Med. Assoc.* September 27, 1941.

A PLEA FOR A BROADER SYSTEM OF VETERINARY EDUCATION, WITH SPECIAL REFERENCE TO INDIAN CONDITIONS

By F. WARE, C.I.E., F.R.C.V.S., I.V.S.,
Animal Husbandry Commissioner with the Government of India

AFTER completing thirty-five years in the Indian service one may perhaps be excused for indulging in a short review of the previous veterinary history of India and, what is more important, for making an attempt to plan for a better future. Incidentally, it may be observed that the present is a very opportune time for undertaking such a task, for when victory has been won there can be no doubt that within a short time India will at least attain a far more independent position amongst the United Nations than she holds at present, which will increase her already well-developed and natural desire to be self-contained in all domestic matters, including that of veterinary education.

In point of fact she has been more dependent on Britain in the past in the matter of higher grade veterinary education than in most other sciences, and this needs a word of explanation. Efforts have been made in India from time to time to introduce higher courses in veterinary education, on the lines of similar courses in the other sciences, but they have all foundered on the rock of finance. In dealing with a bureaucratic system of government the greatest disadvantage from which a profession can suffer is smallness in size, and this probably counts far more in a poor country like India than elsewhere. The demand for veterinary graduates of an advanced type has not been large enough in the past to justify the expense of setting up a separate college designed to turn out this type of man and India has had to wait until public opinion had been educated sufficiently to demand a higher standard of education amongst the rank and file of her veterinary profession and, incidentally, be prepared to pay these men for the extra time and money spent on their education, before a five-years' degree course could be introduced.

Even now the arrangement is not uniform throughout India. Graduates

in veterinary science from the Madras University have already appeared, and arrangements are well advanced for the affiliation of the Lahore Veterinary College with the Punjab University, but in the case of the other three veterinary Colleges at Bombay, Calcutta and Patna the matter is still under consideration. However, a good example is usually followed in India, and one may expect in due course to see all the Indian veterinary colleges affiliated with the local university and turning out graduates to fill the more important posts in the Civil departments, their work being supplemented by "Stockmen," a cheaper agency which can be trained in a few months to carry out much of the routine work for which a veterinary department is required in India to-day.

In a previous article which appeared in this journal for January, 1939, I endeavoured to sketch the early development of the veterinary profession and the establishment of veterinary colleges in India, and those who are interested are referred to that article for details. It is sufficient in the present connection to record the fact that there are 2,471 veterinary graduates in the employ of Civil Governments in India to-day. Of these, eighty are Members of the Royal College of Veterinary Surgeons, England. These men are employed on all types of work, ranging from curative work in veterinary hospitals to those more important duties which may be included in the comprehensive title of Animal Health. This number constitutes the majority of veterinary graduates in the country, but by no means exhausts the list, for others are employed in the Defence Department, local bodies, private practice, etc.

In numbers, therefore, the veterinary profession in India is no mean part of the total Empire services, but even then they are quite inadequate for the prodigious number of animals for whose health and improvement they should be responsible. Apart from other animals, of which there many millions, there are over 200,000,000 cattle in India, about one-fourth of the total cattle population of the world. Those who have visited India will say: "What cattle! One could very well do without many of them." This is true in part, but recent investigations have shown that if India is to cultivate her land properly and have sufficient milk for her women and children, she will require about that number of cattle. But they must be better cattle, and that is the major problem before Indian Veterinary Departments of the future.

How can productivity of India's cattle, and other animals, be increased within a reasonable space of time? It certainly cannot be done by the disjointed methods that have been adopted in many parts of India in the past. A real punch is required, and to get such a punch it is essential that there should be livestock departments (call them what you will) in each province, in which all aspects of the subject are closely co-ordinated by a master mind at the top. It cannot be sufficiently emphasised that livestock improvement will not succeed without the help of the veterinarian, and the veterinary profession must identify itself very closely with livestock improvement and increased production if it is going to survive as a separate entity, at least in a country like India.

It may well be asked what the veterinary profession in India has been doing all these years not to have seen that such an obvious arrangement was made for the development of the livestock of the country. Thirty-five years ago when one made an application for a post in the Indian service one was supplied

with a memorandum which stated, amongst other things, that one might be employed on administrative work, teaching duties, or horse- and cattle-breeding. By the time that one arrived in the country, however, all the important horse-breeding areas had been removed from the control of the Civil Veterinary Department, and a few years later cattle-breeding in most of the provinces followed suit. There was, of course, plenty of other work for veterinary officers to do; in particular, the ravages of rinderpest in most provinces were of great concern, but this disease is, fortunately, no longer the menace to livestock improvement that it used to be, thanks to the improved methods of vaccination now employed.

The main plank in the arguments of those interested in removing cattle-breeding from the control of the Veterinary Department was that improvement of stock in India was almost entirely a matter of better feeding, and a number of centres were set up where feeding trials were introduced, from the results of which we are benefiting considerably to-day. It is, however, now gradually being realised that animal nutrition is only one of the items to be tackled in order to effect permanent livestock improvement and, moreover, to get the best results in animal nutrition work one requires men whose main subject has been animal physiology.

This is the crux of the matter. When research workers in animal physiology were required they were not forthcoming from the veterinary profession and they had to be found elsewhere. To-day, when animal geneticists are required, there is the same story to tell. Many of the advances made in veterinary helminthology, entomology, protozoology and even bacteriology have been through the efforts of members of the medical profession and pure scientists. There can be only one reason for this and that is the system of veterinary education prevalent in the past in British veterinary colleges, which have catered largely for the practitioner class and the Army. These absorbed the bulk of the graduates and on the whole the system will have been considered to have satisfied requirements, but as a training for potential research workers and for those called upon to deal with the health of livestock in the mass, which is the lot of most of those who elect to serve outside the British Isles, it was sadly lacking in several respects. This in itself might not have been very serious, for being recruited largely from the stock-owning classes British veterinary surgeons were soon able to adapt themselves to the changed conditions, but unfortunately the tradition has been passed on to India, where the training of veterinary graduates in the past has followed very closely the British system.

How can the position be remedied? The departmental committee which considered the subject of veterinary education in the British Isles a few years ago made a number of very sound recommendations for its improvement and it is most unfortunate that it has not been possible to give effect to any of these during the war, for every year that passes provides us with a batch of new graduates who appear, to those working abroad, to be lacking in certain essentials of their profession. We require men whose training has been woven round the subject of animal physiology and have practical experience of animals in health and production, as well as in disease. A veterinary student cannot spend too much time on physiology. Not only does this subject form the best

stepping-stone to many branches of veterinary science in which a man may wish to specialise, e.g., pathology, immunology, dietetics, genetics, pharmacology and up-to-date clinical medicine, but no other subject in the veterinary curriculum will do so much to broaden a student's mind and increase the imagination, in which so many veterinary graduates, who have been trained in short cuts for passing examinations, increasing cash returns or swelling the out-patients' register, are wanting. We require men whose conception of preventive medicine does not begin with the use of a hypodermic syringe after a disease appears in a village, but with the selection of the correct types of breeding-stock and the care of the animal organism from the stage of fertilisation of the ovum onwards.

I shall, no doubt, be accused by some of joining those who delight in having a tilt at the young graduate, but that is not my intention. I feel that he has a good deal to complain of and in recent years I have noticed a distinct tendency on the part of veterinary students themselves to ask for a more imaginative course of professional training, which is a very healthy sign. In India, where veterinary education is at the moment much to the fore and new curricula are being devised, a great opportunity presents itself, and it is to be hoped that those in authority will see that old traditions are no longer blindly followed and that, at least in the degree courses, the system of veterinary education introduced will provide the necessary basic training to enable a graduate to specialise in any branch of science pertaining to animals which he may select, and ensure his acceptance on an equality with veterinary graduates of other countries in the administration of international conventions and other measures designed for the improvement of animal health and animal production.

VETERINARY JURISPRUDENCE—II

By THOMAS LISHMAN, M.R.C.V.S.,
Barrister-at-Law, of Gray's Inn

(*Continued from page* 153)

CONTRACTS.—These are agreements enforceable at law, but this short definition requires a good deal of qualification, seeing that some are void because they are illegal, while there are others *prima facie* void because they are contrary to public policy.

Examples of the illegal are: contracts to defraud, contracts to commit crimes, contracts in contravention of Statutes, contracts to trade with the enemy, etc.

Examples of those contrary to public policy are: contracts based on sexual immorality, contracts restraining marriage, contracts restraining trade, etc.

Veterinary surgeons make contracts when they sell or purchase practices; when they agree to give professional attendance to a number of animals for a specified time; when they enter into partnerships; and when they engage locums or assistants; on all of which occasions they will be well advised to have the necessary documents drawn up by a solicitor.

Of special concern are those contracts which bind out of the district, for a specified period of time, partners after the termination of partnership, vendors of practices, and those who act as locums and assistants, for such agreements

XUM

are in restraint of trade and therefore void as being contrary to public policy unless they are:

(i) Reasonably necessary in the interests of the person imposing the restraint;
(ii) Reasonable in the interests of the person restrained;
(iii) Reasonable in the public interest.

It is obvious that anything that restrains a person disposing of his labour freely is contrary to public policy, but it is equally obvious that some restraints may be justified by public policy, e.g., who would buy a practice if the vendor could not be prevented from at once opening up on his own account a competing practice in the same district, or who would employ locums, engage assistants, or take pupils, unless they could rely on means to prevent them setting up next door on their own account? It is, therefore, for this reason, that public policy does allow contracts restraining these people from doing these things, but only to the extent necessary to protect proprietary rights. As regards the binding out of the district of the vendor of a practice the following has been stated in a Court: "Without such a covenant, a purchaser would not get what he is contracting to buy, nor could the vendor give what he is contracting to sell."

To make sure that the Court would enforce them, there is only one test to which these restraining bonds should be submitted, and that is the test of reasonableness.

The restrictions must be reasonable, and as the whole contract will be void if it is found unreasonable in any part which cannot be severed (i.e., cut out) from the rest of the document, without the resulting destruction of the whole agreement, it will be prudent always to err on the side of moderation, because the longer the period of restriction, or the wider its space of operation, the more difficult will it be for it to pass the test of reasonableness.

Where a binding-out contract contains the smallest item that could be considered unreasonable, the whole agreement is in danger, because it is then what is known as a contract illegal in part, i.e., one containing several distinct promises, some of which are illegal and others legal. In such a case the Court will enforce those which are legal, and refuse to enforce those which are illegal; if the illegal part cannot be severed from the legal part without destroying the rest of the contract the whole is unenforceable.

An example of severability was seen in a case which came before the Chancery Division in 1933, where a veterinary surgeon used a printed form, supplied by an agent, on which to draw up a bond binding out an assistant. This contract not only aimed at preventing the assistant practising veterinary surgery in a certain specified district, but also "dealing in horses." The Court held that this was unreasonable, in so far as the "dealing in horses" was concerned, and the whole contract would have been void in consequence had it not also been held that "dealing in horses" being a distinct business it could be severed without destroying the rest of the contract.

In drawing up these deeds of covenant it is as well to be exact in defining the area from which a party is excluded, and misunderstanding is more easily avoided by saying within so many miles of the G.P.O., the Town Hall, or the railway station, than by saying within so many miles of a large city. If the

word " clients " is used in the document it should be clearly defined as to whom the word is intended to refer, for clients come and go, and while some may have come on to the books after the agreement, others may have left before.

It should be noted that the bond does not cease on the death or retirement of the principal, but is still enforceable by his successor in the practice. In conclusion, it is exercising wise discretion always to have these legal documents drawn up by a solicitor, or, failing this, to use a form supplied by a transfer agent.

(*To be continued*)

THE THORACO-ACROMIAL ARTERY OF THE DOG

By J. G. SPEED,
Anatomy Department, Royal (Dick) Veterinary College, Edinburgh

THERE is considerable diversity in the descriptions of this artery met with in text-books, and during supervision of some five hundred dissections of the dog I have noted variations in the method of its branching.

1.—In Bradley's " Topographical Anatomy of the Dog ":

" The axillary artery is a continuation of the subclavian artery. Commencing on a level with the first rib, it runs down the limb as far as the insertion of the teres major muscle. Most of its branches will be examined in connection with the scapular and arm regions, but two should now be noted as supplying the pectoral muscles and their neighbourhood. These are the thoraco-acromial and external thoracic arteries.

" A. thoracoacromialis.—The thoraco-acromial artery soon divides into two branches, a ramus deltoideus and a ramus pectoralis. Both of these have been already noted in connection with the dissection of the pectoral muscles. Very often the deltoid ramus arises from the omo-cervical trunk."

2.—Sisson Grossman, " The Anatomy of the Domestic Animals ":

" The axillary part of the brachial artery gives off the thoraco-acromial and external thoracic arteries. The thoraco-acromial artery supplies branches to the deltoid and pectoral muscles."

3.—Ellenberger und Baum, " Handbuch der vergleichenden Anatomie der Haustiere ":

" The A. axillaris gives off: I. Cranially, the A. Thoracico-acromialis corresponding, in the carnivores, to the end branches of the truncus omocervicalis."

4.—Chauveau : " Traité d'Anatomie Comparée des Animaux Domestiques ":

" Axillary Arteries of the Carnivora :

Special branches of the axillary trunk are :

1. . . . .
2. . . . .
3. The inferior cervical artery giving off the pectoral branches (inferior cervical artery S. omocervical trunk."

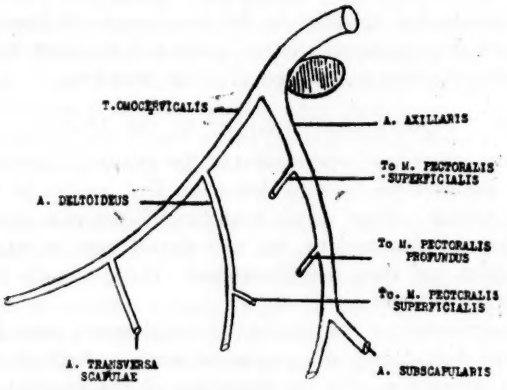
" Comparison of the axillary arteries in man with those of animals :

. . . The axillary gives off: the thoracica acromialis, resembling the descending branch of the inferior cervical artery of large quadrupeds. . . ."

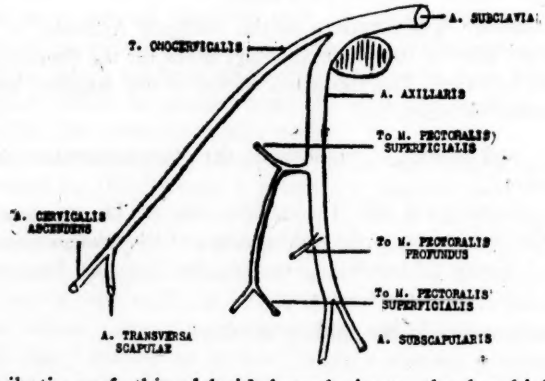
None of these descriptions conforms with the usual appearance we have noted in the dissecting room. In 98 per cent. of the dogs dissected a pectoral ramus arises from the axillary artery, passes round the cranial border of the deep pectoral muscle in company with the superficial pectoral nerve, and enters the superficial pectoral muscle, which it supplies.

A deltoid ramus arises from the omocervical trunk a short distance from its origin and passes outward and backward into the narrow space between the superficial pectoral muscle and the brachio-cephalic muscle. It lies there in company with a vein which forms a communicating branch from the cephalic vein to the external jugular.

SKETCH A



SKETCH B



The distribution of this deltoid branch is to the brachial part of the M. brachiocephalicus, and to the M. pectoralis superficialis, and usually there is a small branch to the M. pectoralis profundus.

A diagrammatic representation of this arrangement of the branches of the "thoraco-acromial artery" of the dog is illustrated.

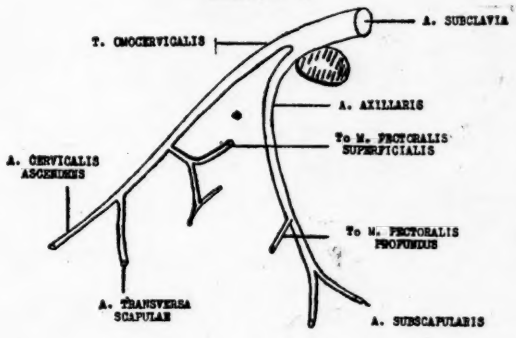
The above description applies to 98 per cent. of the subjects which have been examined in our dissecting rooms.

The commonest variation we have found has occurred in under two per cent. of the dogs. An example was in a smooth fox-terrier dissected in 1938.

In this case (see Sketch B) a thoraco-acromial artery was present.

One other variation has been noted. This occurs more rarely, and we have noted it in only three dogs. One example occurred in a wire-haired fox-terrier bitch dissected in 1941, the thoraco-acromial artery taking its origin from the omocervical trunk.

SKETCH C



Summary

The presence of a thoraco-acromial artery is exceptional in the dog, the deltoid branch being given off by the omocervical trunk and the pectoral branch by the axillary artery.

REFERENCES

(1) Bradley, O. C. (1927): "Topographical Anatomy of the Dog." Edinburgh.
(2) Sisson, S., and Grossman, J. D. (1938): "The Anatomy of the Domestic Animals."
(3) Ellenberger and Baum (1926): "Handbuch der vergleichenden Anatomie der Haustiere."
(4) Chauveau, A. (1890): "Traité d'Anatomie Comparée des Animaux Domestiques."

NOTES ON THE TREATMENT OF ACTINOBACILLOSIS BY INTRAVENOUS MEDICATION WITH SODIUM IODIDE

By JOHN ADAMSON, M.R.C.V.S.,
Bolton

THE following is a record of a few cases of actinobacillosis or "wooden tongue" which have been treated by the above method. The solution used in every case was made by dissolving 1 oz. of Sodii. Iod. in 16 oz. of Aq. Dest. and injected into the jugular vein. In every case the solution was injected without warming it to blood heat and without any special precautions, using a Hewlet's Neo-Injector. The animals all seemed to tolerate the injection well, not showing any discomfort whatsoever and no symptoms of iodism have been

XUM

recorded. The solution is carried ready for use and not made up fresh as required, and in some cases may have been several weeks old.

Case 1.—16/4/41. A Shorthorn cow, about five years. Lesions appeared to be confined to the upper lip and muzzle, which were very much thickened and hard. Animal had received treatment extending over a few weeks with a proprietary remedy. The intravenous medication adopted was in the nature of an experiment. Spectacular improvement followed, and the injection was repeated on 22/4/41, when the cow remained apparently normal until 19/5/41, when the lips were again very swollen. Injection repeated without marked improvement and Hyd. Biniod gr. v and Pot. Iod. gr. x b. i. d. were commenced. Improvement followed and when the cow was saleable the owner disposed of it.

Case 2.—20/3/42. A Shorthorn cow, about four years old, had shown symptoms for about four days. Lesions in the anterior third of the tongue. Injected. 23/3/42, cow slightly worse. Hyd. Biniod, gr. v and Pot. Iod. gr. x administered b. i. d. Recovery after about three weeks.

Case 3.—11/5/42. A Shorthorn cow, about six years old, with lesions in anterior half of tongue. Had received forty doses of above prescription without benefit. One injection resulted in complete recovery in a week. There was no recurrence.

Case 4.—16/6/42. A Shorthorn cow, about eight years old (T.T.). It was in a very emaciated condition, having been showing symptoms for five weeks. It was quite unable to feed and the tongue was swollen to such an extent that the cow could not close the mouth. There were extensive lesions in the dorsum with ulceration. The owner was told that the case was not very hopeful; he asked if it was possible to treat the animal by intravenous injection, having read about this method of treatment. In view of the animal's weak state he was warned that there might be some risk about this, but he agreed to accept the consequences. Injection was given without incident and by 22/6/42 a spectacular improvement had taken place, the cow now being able to eat and had gained a little weight. A second injection was given and a steady improvement was maintained. The third and last injection was given on 29/6/42, when the only evidence of the disease was a shallow ulcer about the size of half-a-crown on the surface of the tongue in apposition to the upper molar teeth. Complete recovery followed.

Case 5.—19/7/42. An Ayrshire cow, three years old. Lesions in anterior half of tongue of three days' standing. A single injection appeared to resolve the condition completely in forty-eight hours and there has been no recurrence.

Case 6.—27/9/42. A Hereford heifer, two years old. This case was not seen on this date but forty doses of the above prescription were sent on to the owner. When seen on 26/11/42 well-developed lesions were present in the middle portion of the tongue anterior to the groove and swelling present in the intermandibular space. Injection was followed by a rapid improvement, which was maintained for three weeks, when symptoms returned 15/12/42. A further injection was given but the dose was increased to 1½ oz. Sodii. Iod. in the same quantity (16 oz.) of Aq. Dest. Rapid improvement again followed. This was maintained until 28/2/43, when the heifer again commenced to show symptoms but was now quite fat. A further injection containing 1½ oz. was given. Again

improvement followed, and the heifer was slaughtered two weeks later. There was no opportunity to make a post-mortem.

Case 7.—10/10/42. A Friesian cow, nine years old. There were well-developed nodules in the substance of the tongue anterior to the food groove. Injections were repeated 17/10/42, 26/10/42 and 11/11/42, resulting each time in a marked improvement, which, however, was not maintained, the symptoms returning. Hyd. Biniod. with Pot. Iod. was commenced 4/2/43 and has apparently resulted in a complete recovery. Unfortunately the cow has since developed tuberculosis and has been slaughtered.

Case 8.—21/10/42. A Friesian heifer, two years old, four months pregnant. Well-defined lesions, symptoms had been apparent for about three weeks. Injection was repeated on 2/11/42, resulting in a complete recovery without recurrence so far.

Case 9.—23/10/42. A cross-bred Shorthorn-Friesian, five years old, seven and a half months pregnant. There was a spherical swelling in parotid region about the size of a duck egg with a smaller swelling immediately below. The swellings were hard and circumscribed. One oz. Sod. Iod. given intravenously more as a diagnostic agent than as a curative, as the lesions were considered to be due to a tubercular infection, but it was thought that if they were due to actinobacillosis improvement would follow. No improvement took place, the swellings becoming progressively larger and showing a tendency to fuse. The animal was disposed of and the case could not be followed up.

Conclusions

The intravenous injections of Sodii Iod. in cases of actinobacillosis affecting the tongue was in all cases, except Nos. 2 and 9, followed by marked improvement. A disappointing feature is, however, that this improvement is not usually maintained and cases show a much greater tendency to recur than those treated per os. Possibly a further injection should be given after the animal appears to be clinically cured.

Two further cases have been treated recently, but it is too early as yet to give the result.

Advantages are that improvement when it does take place is spectacular and much more rapid than cases treated by the mouth. The trouble of "drenching" night and morning over a long period is avoided and clients are favourably impressed by intravenous medication.

OBSERVATIONS ON DIAGNOSIS, POISONING AND ELECTROCUTION

By CYRIL W. M. WALKER, M.R.C.VS.,
Halstead, Essex.

Some two years ago a farm was visited where three bullocks were found lying dead, the owner suspecting anthrax.

The previous day one bullock had been noticed ill and had been treated by a "quack." After drenching, the bullock went mad and died about an hour afterwards. The other two died in the night following symptoms of mania.

XUM

A blood smear was made and found to be negative for anthrax.

The numbers involved and sudden death made one suspicious of acute poisoning.

Animals in the next yard were receiving the same food and water and were not ill.

In a field adjoining this yard was found an old baker's-van, which had been there for many years. The wheels had been removed and the rest used for sheltering pigs; the latter were no longer economical to breed. The van was covered by a canvas roof which had frequently been painted with lead, when in use, to keep the bread dry.

On close examination there were signs that the canvas roof had been tampered with.

Scrapings of the paint from the canvas boiled up in water gave a dense white precipitate with dilute sulphuric acid and a yellow precipitate with potassium iodide.

The symptoms were of short duration and were acute nervous disturbances associated with mania and sudden death.

At post-mortem, the findings were acute alimentary inflammation.

The stockman later admitted that the bullocks had got out of the yard, but only for a few minutes when he left the gate open on the morning prior to the first fatality.

About a year after the above case a similar one was encountered.

Four calves were in a small field in which were a few chicken-runs and a small hut for shelter.

One calf was ill and one had died suddenly the previous evening. The owner said the latter calf had run into a fence and killed itself. The sick calf showed symptoms of abdominal pain, had diarrhœa and a temperature of 106.

In view of the sudden death the previous day the possibility of poisoning was not overlooked. The premises were then searched for evidence of mineral poisons. After this search the owner then stated that the calves had been kept on a field close by. On reaching this field a small orchard was seen contiguous to it. In this orchard was seen the remains of an old baker's-van. On examining the cover of the van there were obvious signs of damage and tearing of the canvas.

The owner said the calves had broken into the orchard the previous day.

The sick calf was given a purgative dose of magnesium sulphate followed by chlorodyne given twice daily and recovered.

A farmer who was in the habit of leaving his calves late, before being cut, lost one through hæmorrhage; so he said to his castrator, who was not a veterinary surgeon: "Why don't you cut the calves the same way as you do the colts?"

So the next two calves were cut using wooden clams, which must have been dressed with perchloride of mercury.

After an interval of two or three weeks (the scrotal wounds had healed) these two calves developed signs of mercurialism.

There was persistent salivation with frothing at the mouth and posterior paralysis. If held up the calves could stand but would fall if they tried to walk.

These two calves were about five months old and in a yard with others which were in a normal state of health.

The two calves developed inappetence in the course of a few days and were slaughtered.

In this case all the cows were in the cowshed and normal the night before. In the morning two were found dead and another seriously ill.

The symptoms of the patient were as follows: There was serious enteritis as evidenced by the diarrhœa. Micturition was frequent, cloudy and blood-stained associated with straining. The temperature was raised and the cow was unable to get up.

The cow was rugged-up and four eggs given twice daily; chlorodyne was given to check diarrhœa and control pain. The cow recovered uneventfully in the course of a few days.

On questioning the cowman he said he had run out of minerals and found a bag which he thought was the same stuff and fed this to the last few cows.

In view of the urinary symptoms nitrate poisoning was suspected.

On analysis the substance was found to be a fertiliser containing sodium nitrate.

In the winter of 1942 the phone rang in the early hours of a freezing morning.

The farmer stated that the cows were all normal the evening before and awoke him at 2 a.m. bellowing loudly. On going to investigate he found six cows dead and one dying.

This looked a clear case of poisoning as anthrax would hardly kill so many at once.

However, on reaching the farm the problem had been solved.

The farmer had fetched his cowman, and when the latter went to release the chain of the cow that seemed to be dying he shouted and jumped back. The farmer then repeated the process and also jumped back having received an electric shock, so he switched the current off at the main switch before releasing this cow.

As the night was freezing the copper had been left on, it was heated electrically. The filaments of the copper got overheated and bent, causing them to touch the sides of the metal copper. The copper had an earth-wire which unfortunately was connected to a pipe which happened to be the water-pipe leading to the drinking-bowls. The current was taken from the main, 230 volts a.c., with a 15-amp. fuse-wire, which was not blown.

Six of the cows touching the bowls or water-pipe were killed outright. The seventh was paralysed, calved a week later and was slaughtered the following week as it could not get up. The calf was born alive.

Although it was a cold day the carcases of the electrocuted cows were putrid when seen at 4 p.m. the same day. (Cf. lightning stroke.)

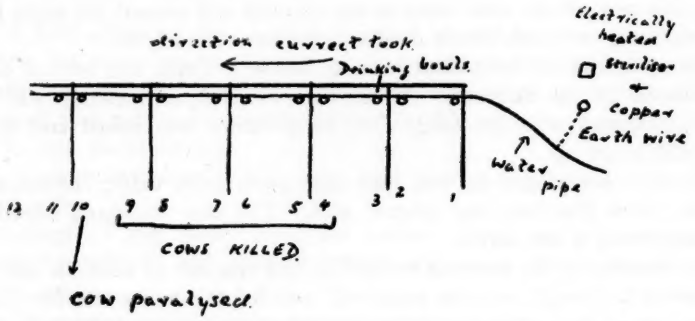
One or two other cows had received a slight shock and bellowed loudly at times as if expecting another shock, and were very nervous for a few days.

An automatic cut-out was later installed which will cut off the current on its own accord in the event of a future short-circuit.

This is included here as it certainly looked like a case of poisoning and

the possibility should be borne in mind where electrical apparatus is installed if only for personal protection.

Also it is advisable that electric-light switches should be situated above the general height of the cows' horns.



The water-bowls were at a lower level than the water-pipe itself so that a slight leakage to earth took place at each bowl and the current got weaker as it passed down the shed.

In considering cases that might very well be poisoning the diet must always be considered.

Cases of intense purgation and with it loss of milk have been met as a result of the introduction of a new batch of cake to cattle, due to irritant poisons in the seed residues.

In order to maintain milk yields the excessive use of concentrates by an over-zealous cowman may have untoward results.

Cows suffering from intense pruritis because of this have been seen. The pruritis affected the hind legs chiefly but also the fore legs in a few cases. Nearly all the cows (about twenty) were affected.

The cows would keep stamping the hind limbs in perpetual motion, shifting the weight from one leg to the other, then kick out with one leg and shake it in mid-air as if to remove a sharp stone from between the hooves. They would lick at the limbs also. They would then lie down for a while then repeat the process, getting no rest. On account of this they were very difficult to milk.

This had gone on for two days and cleared up in about the same time when the concentrated "cubes" were about halved.

In May, 1942, a case of unusual interest was encountered.

A telephone call stated that nearly all the cows on a farm had milk fever.

Of the nineteen milking-cows twelve showed symptoms of ataxia and were in a state of semi-coma, these also had intense diarrhœa as also had some of the apparently normal cows.

The cowman said it took him two hours to get the cows in. They were brought into the cowshed and loose boxes by the use of a stick to get them up and a man on each side helped them to stagger along.

In view of the number of cows involved poisoning was suspected.

Treatment

The drowsy cattle were given a pint of tea each (in view of the caffeine and tannin content of tea) and two ounces of calcium boro-gluconate subcutaneously. Those that were drowsy were given the tea again that night. These cows were also kept warm by being rugged-up to combat shock. Because of the intense diarrhœa they had to be given chlorodyne as soon as possible.

Those with no nervous symptoms were given one ounce of chlorodyne b.i.d.

The cows were kept in for a few days and gradually turned out to grass as the state of their fæces permitted, but to a different pasture for a while.

No fatalities were encountered and all were normal in about a week.

Diagnosis

Having attended to the patients a search was made for possible poisons.

The field where the cattle had grazed was examined. Along one side of the field a hedge had been cut down that winter. All along where this hedge had been were innumerable plants flowering, and recognised as the "Cuckoo Pint" or "Wild Arum Lily."

The cattle were kept off this field until the plant had been removed.

Lander states: "Animals do not eat the plant readily, even if kept from other foods" (i.e., Arum Maculatum).

However, certain factors make it more palatable, e.g., the removal of the hedge and extra sunlight on a plant which is normally shaded.

It was the pale-green leaf and perhaps the flower that was eaten and not the bulbous root.

Discussion

Cases of inorganic poisoning in animals are often the result of carelessness or malice and the legal aspect must always receive attention.

Salt poisoning in young pigs has been met (we have been told lately that this does not exist as such) associated with too big a percentage of fish meal to balance the protein requirements of the diet.

Diarrhœa, often associated with nervous symptoms, seems to predominate. Diarrhœa is taken as a favourable sign, whereas constipation associated with poisoning is more often a bad one.

Acorn poisoning is not always met when there is a large acorn crop, but seems to have a bearing on the poison content of the acorn which seems to vary in different seasons. There is nothing more heart-breaking and obstinate and incurable than the ruminal stasis associated with acorn poisoning, especially in yearling cattle or the intestinal stasis of young horses at grass—so called "grass stoppage" associated with colic, and is also fatal. (Is this organic poisoning?)

Many cases will undoubtedly prove fatal in proportion to the amount of drug taken; the tissue damage or permanent loss of function and treatment must be symptomatic on most occasions; the importance of opiates cannot be overemphasised and shock treated.

It is in cases of poisoning that the basic training of the veterinary surgeon (so much maligned these days) asserts itself and a correct diagnosis is important to prevent a repetition of what should be preventable by taking appropriate measures.

XUM

Clinical Cases

NERVOUS DISTEMPER IN THE DOG

By E. von LUSTIG-LENDVAI, M.A., M.R.C.V.S.

THIS term comprises at least four different kinds of syndromes: (1) Meningo-encephalitis; (2) Paralysis; (3) Paresthesia; (4) Chorea.

Whilst in some cases differentiation between these four syndromes may be difficult, more frequently it is quite possible to differentiate between each separate entity. One can classify the groups according to history and symptoms exhibited.

(1) *Meningo-encephalitis.* Symptoms appear during the course of ordinary C.D.; very often at the time of C.D. pneumonia. They are as follows: Altered facial expression, staring, nystagmus, locomotory ataxia, fits, sometimes twitching, sometimes paralysis, raised temperature, and reflexes altered.

(2) *Paralysis* occurs during or shortly after C.D. Usually the hind limbs are affected. Symptoms are too well known to require description.

(3) *Paresthesia.* This is a condition which appears one to four weeks after the main symptoms of C.D. have disappeared. The animal suffers from the illusion that it has a pain or an itch somewhere on the body, especially in tail or legs. It chews and scratches to a degree which might lead to auto-mutilation. During this period the temperature remains raised. This syndrome seems to have its origin in the C.N.S. and should be treated as for meningo-encephalitis, with additional treatment of local anæsthetics to the affected regions of the body.

(4) *Chorea.* This usually appears after the C.D. has taken its course and is, as a rule, a sequel to a very protracted subdued type of distemper. The usual history accompanying these cases is that for six to eight weeks before the first appearance of symptoms the animal had been off colour, subject to occasional attacks of diarrhœa, slightly dull and sometimes off food.

Whilst at the beginning chorea is purely localised, it usually spreads to the neighbouring muscles, increases in rhythm and intensity up to a certain point, after which the quality of the symptoms remains stationary. On rare occasions spontaneous recovery takes place after a couple of months.

We thus see that, whilst the meningitis form of nervous distemper appears to be an acute infection of the brain and its membranes (some authors declare that they have discovered inclusion bodies, others deny their existence), and paralysis in an affection of the spinal cord, chorea, on the other hand, seems to be confined to the motor-nerves. These are damaged in their course between their origin and the muscle. It may even be possible that, as C.D. is generally a disease of the young animal, the long-drawn-out type which precedes chorea may have led to some nerves being deprived of their building material.

Based on this assumption, several dogs affected with chorea have been treated with vitamin B_1. Of these I will mention three cases:

CASE 1.—Dachshund, male, 10 months old. Appearance of chorea three months after C.D. It had been treated for two months with sedatives with no result. The dog presented the most extensive symptoms of chorea I have seen. Not only were the fore and hind limbs affected, but there was also jerking of the head from side to side. The animal was unable to walk. After a fortnight's

treatment the dog was able to walk and the severity of the twitches was reduced. After three months the animal was completely cured and won prizes at open competitions. The treatment consisted in vitamin B_1 injections, 1 mg. (333 I.U.) every second day, and 6 mg. pure crystalline B_1 were given daily per os.

CASE 2.—Alsatian, male, 9 months. Four weeks after an apparently slight illness, chorea of lips, facial muscles and right shoulder developed. Treatment: 2 mg. B_1 every second day, 9 mg. per os daily. It was cured after six weeks. There was no recurrence.

CASE 3.—A dachshund bitch, one year old, with chorea appearing three months after C.D., was treated for three months with no apparent result. Treatment was discontinued.

It has been found that, if, as rarely happens, chorea develops while the animal is still in a febrile condition, treatment with B_1 will be useless.

Owing to the cost of the treatment, the number of cases treated are too few to be conclusive proof of the efficacy of B_1 therapy in post-distemper chorea. The results achieved, however, seem to indicate a promising method of dealing with the condition.

SEQUEL TO ULCERATIVE CYSTITIS OF THE COW'S BLADDER

By J. B. HARMAR, M.R.C.V.S.,
Morpeth

SUBJECT: A red Shorthorn cow about ten years old, six months pregnant, and in good bodily condition.

Owner reported that the cow was not eating and was passing bloodstained urine. Rectal examination showed bladder nearly empty, with greatly thickened walls. When empty it was about the size of a large goose egg; it gave the impression of being much thicker on the dorsal than on the ventral aspect. Examination per vagina showed that the urethra was not thickened, as is usual in bovine cystitis, and it was possible to insert a finger into the urethra and touch some ragged ends of material which were apparently attached to the bladder wall. By manipulation it was possible to see these ragged ends protruding through the urethral orifice. The cow's temperature was 104.5, and a very guarded prognosis was given. The owner, however, was very anxious to obtain a female calf from the cow, as she had been served by a pedigree bull which had left the district.

The diagnosis was cystitis, possibly an infected neoplasm of the mucosa.

A course of urinary antiseptics was prescribed. Three days later the cow was eating and the temperature normal. The owner was advised to butcher the cow now as a recurrence of the condition seemed highly probable. Two months later, when about eight months pregnant, the cow again passed quantities of blood and pus in the urine and the owner called at the surgery for more medicine.

XUM

One month after this, when the cow was in full term, the owner reported that she was calving but not making much headway.

On examination, the cow was found to be intermittently straining and passing each time about a cupful of uterine fluid. Examination per vaginum, however, showed the os closed and the uterine seal in position, and it was possible to squeeze the bladder through the vaginal wall and expel uterine fluid through the urethra. It was found that the bladder took about five minutes to fill with fluid, which was then expelled by straining.

The uterine seal was removed easily and the os gently dilated until the amnion entered the vagina and occluded the urethral orifice. The cow was then left for two hours. When the calf was found presented at the vulva in the normal position, gentle traction served to deliver it, a healthy heifer calf.

Examination of the uterus showed that it was adherent to the bladder and in communication with it through a very fine hole.

The cow appeared to recover from the labour well but three days later she refused food and was sent to be slaughtered as a casualty by the owner. The carcase was in good condition and passed for human consumption. Examination of the uterus and bladder confirmed the diagnosis, the growth on the bladder wall appeared to be an ulcerated papilloma which by contact with the dorsal wall had ulcerated this and set up a plastic peritonitis involving the uterus: contractions of the uterus at term had apparently ruptured the junction.

SCHISTOSOMUM REFLEXUM TWIN TO NORMAL CALF

SUBJECT: A dark roan Shorthorn cow, about 10 years old, served by an Aberdeen Angus bull.

The owner reported that she calved to time without assistance a live calf two hours ago and was now engaged in "pushing her puddens out."

On examination the "puddens" proved to be the intestines and liver of another calf. A few ribs and the heart could also be felt, but no head or legs. The cow refused to rise. 15 c.c.s of a 2½ per cent. Procaine hydrochloride solution were given epidurally. The intestines and other available viscera were removed by tearing. Portions of the calf could then be felt, but nowhere was there hair. The conclusion was that the calf was entirely enclosed in a skin bag with the flesh side outermost. The skin was opened with a hook knife over the head and the hand inserted. The head could now be felt distinctly, surrounded by a jumble of legs. The head was removed with the Danish wire saw embryotome. Two of the legs, which most nearly approximated forelegs in their structure and which were also nearest the vulva, were roped and pulled through the slit in the skin. Traction was applied to these but was ineffectual. The hind legs were repelled and the whole mass given a half-turn so that the incision in the skin was now ventral. The calf then came easily, although it was necessary to cover the ends of the ribs with the hand to avoid tearing the vaginal wall.

On examination outside, the calf proved to be a complete schistosomum reflexum. A normal head, surrounded by four short twisted legs, a very short spinal column, a normal sized pelvis, but compressed laterally; all enclosed in the skin bag. Outside were eight pairs of short ribs, no sternum, but a complete

set of intestines from œsophagus to rectum, lungs, liver and heart.

The next day the cow had risen but the membranes had to be removed manually three days later. She made a complete recovery and the first calf appeared normal in every way.

Both calves were female.

I have never before heard of a twin schistosomum, nor have I ever come across a case where the invagiation was so complete. I have had cases ranging from a large umbilical hernia with the hernial sac missing to complete absence of thoracic or abdominal skin and the spine curved dorsally, but until this never a case where the skin formed a complete bag.

It is highly probable that if the case had not been one of twins, and the calf in consequence been small, the outcome would not have been so happy.

The owner had had three previous calves from this cow, all normal singles, and nothing remarkable was ever observed in the progeny of the bull.

MUMMIFIED FŒTUS—TWIN TO NORMAL FOAL

SUBJECT: A 12-year-old Clydesdale mare foaled her sixth foal, a healthy colt, twelve hours previously. Owner reported retained membranes.

The case appeared to be a normal one of its kind. I removed the placenta from the left horn without difficulty, but in the right horn it was very adherent and it appeared that I was invaginating the uterus, as a large mass appeared in the lumen. Gentle traction on the placenta and further separation of it from the uterine mucosa, however, enabled me to feel the mass better, and it appeared to be a bag of bones; the mare then strained and expelled mass and placenta.

Inside the placenta on the right side was a mummified fœtus complete in separate amnion and surrounded with a brown glairy fluid. When the fœtus was washed it was the size of a fox terrier dog. The umbilical cord was twisted around one hind leg above the hock, the leg below the twist being slightly smaller than the opposite one. No muscular tissue was present, the fœtus being just skin and bone. A heart could be recognised but the abdominal organs were in a semi-fluid state. There were no hairs present on the skin but a few bristles on the nose and tail. I estimate that the fœtus was about six months gestation when it ceased to grow.

The mother received two antiseptic pessaries and was served eight days later and produced a healthy foal to this service the next year.

This case is remarkable, owing to the rarity of twins and mummified fœti in the mare, especially to find both conditions together.

Abstracts

FOOT-AND-MOUTH DISEASE IN MAN*

By HENRYK DLUGOSZ, M.D.

WITH each new epizootic of foot-and-mouth disease (f.a.m.d.) we must consider whether infection of man is possible, and, if so, is it of practical

*Reprinted by permission of the *British Medical Journal*.

XUM

importance? That infection may occur is instanced by the experimental infection of French scientists through drinking infected milk; by similar results among workers in the German research centre on the island of Rügen; and, finally, by positive results obtained in guinea-pig inoculation from certain cases of f.a.m.d. (aphthous fever) in man which have been described in medical journals.

Infection of man is therefore possible, and, although occurrence is rare and characterised by persistent mildness, we consider it to be of no little scientific interest. The rarity of the disease in man (we know of only ten cases prior to the last war, as opposed to many thousands of cases in animals), and its mildness, do not deprive it of interest, as the slightly affected man may start a serious outbreak among valuable livestock. As the disease causes cattle to lose weight and their milk production is lowered the condition is of paramount importance to farmers and exporters. To-day especially, when the need for maximum food production is a major consideration, the early diagnosis of all cases is essential, if only from the purely economic point of view.

I have had the opportunity of observing two cases of f.a.m.d. in man. The first I studied in detail in Poland, in the University Clinic of Lwow. This has been described in *Polska Gazeta Lekarska* (1938, *17*, 501). The second case, that of a Polish soldier, was brought to my notice in Scotland in September, 1940.

Case I

A man aged 40 was wounded in the finger by a splinter from a butcher's table. The wound, although slight, healed very slowly. A transitory lymphangitis and lymphadenitis followed in a few days in the affected arm. Two weeks later general weakness, headache, and febrile manifestations developed, the temperature rising in a few hours to 102 deg. Fahr. These symptoms persisted for three days, the patient believing himself to be suffering from "influenza." On the third day painful mastication and salivation ensued; multiple vesicles appeared in the mouth, later giving way to ulcer formation. The following day the ulcerations were found to be larger, and were bleeding. The doctor, reconsidering his original diagnosis of "aphthous stomatitis," suspected an acute leukæmia or agranulocytosis. Blood examination, however, revealed no abnormality. Within the next few days the temperature had risen to 105 deg. Fahr., the mouth symptoms had increased, and the skin around the mouth showed areas of pustulation. The patient at this stage was sent to the University Clinic.

On my examination (at the end of the first week of the illness) I found the temperature to be 103 deg. Fahr., while excessive salivation was a prominent feature. On the skin around the mouth there were vesicles filled with a serous turbid fluid. Some of these were covered with crusts. Multiple vesicles and small polycyclic ulcers with grey bases were found over the inner sides of lips, cheeks, and palate, the surfaces of the tongue, and on the pharynx. There was slight bleeding from the ulcerating surfaces, and the breath was very foul.

The characteristic sweetish-mouldy smell of the patient reminded me of the smell I once sensed near a cow with foot-and-mouth disease. This smell facilitated the diagnosis. On the skin of the trunk there was a group of vesicles resembling herpes zoster. Large erythemata of cherry-red colour were present

on the palms, while on the soles there were single polycyclic spots of similar coloration.

On the tenth day the mouth lesions began to heal, but on the palms and around the finger-nails large vesicles appeared. Vesicles appeared also on the soles, but these remained single. During the next few days the mouth lesions had healed, but the vesicles on hands and feet persisted. By the third week of the illness the ulcers of the mouth had healed without cicatrisation, and the perioral lesions had disappeared. Finally the vesicles on the hands and feet healed after separation of the epidermis, leaving no cicatrices. There were no sequelæ or complications, the temperature gradually returning to normal after the appearance of the vesicles.

Blood examination during the illness revealed no abnormality, but a lymphocytosis was present during convalescence. The red cell sedimentation rate (Westergren-Biernacki) was never above 8 mm. an hour. The Wassermann reaction of the serum was negative. Guinea-pigs inoculated with the serous fluid from the soles and palms developed the typical signs and symptoms of f.a.m.d. after twelve to fourteen days.

The Veterinary Office, at my request, undertook a search for cases of f.a.m.d. in the patient's district, and were successful in locating several cases among cattle. The diagnosis of the disease in man was therefore instrumental in bringing to light unsuspected cases in animals in the same locality.

Case II

A Polish soldier, aged 31 and of previous good health, reported sick on account of vesicles on his hands which made work impossible. He gave a history of general weakness of fourteen days' duration. Twelve days previously he had been troubled by vesicles in the mouth and on the inner surface of his lips, which he attributed to burns from hot food. Vesicles had been present on his hands for seven days before reporting. Large quantities of unboiled milk formed part of his normal diet. Examination revealed ulcerated areas on the tongue and inner surface of cheeks and lips. Vesicles with crusts were present round his mouth; while the palms, fingers, and soles showed areas of vesiculation. His temperature was 98.6 deg. Fahr. A diagnosis of f.a.m.d. was made on these findings, and the patient was sent to hospital in Glasgow owing to the proximity of pasturage to the camp.

Commentary

These two cases may serve to show the occurrence of f.a.m.d. in man. Infection may be external, as evidenced by the first case and by the work of experimenters, or via the digestive system as in Case II and in the French researches. The incubation period is apparently about fourteen days.

Characteristic findings are the headache and general weakness, and pain in the extremities. About the third day excessive salivation and superficial ulceration of the oral mucous membrane and vesiculation of the skin around the mouth ensue. Later the vesicles appear on the palms and soles and around the nails, being preceded by cherry-coloured erythema. The vesicles contain a turbid serous fluid. All the skin and mucous membrane lesions heal without cicatrisation. The temperature is high at first and falls after the appearance of the vesicles, returning to normal by the second week. In a few cases the temperature remains

normal throughout. No changes are apparent in any of the internal organs, in the blood, or in the sedimentation rate (an important point in the differential diagnosis of acute leukæmia and agranulocytosis). The disease appears to run a more moderate course in man than in animals.

Differential diagnosis must include aphthous stomatitis, acute leukæmia, agranulocytosis, scurvy, and drug rashes. The distribution of the lesions, blood examination, and guinea-pig inoculation will aid diagnosis. Treatment is purely symptomatic.

Taking into account the appearance of two such cases in my own experience in so short a time, I am in some doubt as to whether f.a.m.d. is as rare in man as I had hitherto believed. Owing to the comparative mildness of the constitutional upset many cases may never come to the notice of the medical man, and not a few cases may be wrongly diagnosed.

Conclusions

The sanitary authorities would be well repaid if more attention were given to the prevention of the spread of f.a.m.d. by man.

There should be co-operation between the doctor and the veterinary worker to prevent human sufferers with f.a.m.d. from having contact with animals.

Correspondence

To the Editor, THE VETERINARY JOURNAL.

Notes on Two Unusual Cases

SIR,—I was asked on the telephone to attend a yearling thoroughbred which had colic. The owner was told to give it one of the usual colic drinks and I would be along as soon as possible. However, in about twenty minutes' time another message came saying that the animal had died. I had seen this yearling two days' previously and it appeared to be in perfect health. That evening I went to see the post-mortem and this revealed that the cause of death was internal hæmorrhage. The animal had been noticed to be dull and standing in the middle of the box on the evening previous to its death. By morning it was weak and disinclined to move, and the owner thought this was due to some pain or colic. At the post-mortem, two hoof-marks were seen on the abdominal wall over the spleen with localised deep bruising and there was evidence of hæmorrhage from the spleen. Two yearlings had been together but they had to be separated for they kept kicking each other. They had been separated over fourteen days, so this fatal kick was of fourteen days' standing. I think this long history is rather unusual and it may be some explanation of how steeplechasers can lose their form after falls or other injuries.

The subject was a horse in training, which had purpura hæmorrhagica. The head and nostrils swelled to an alarming degree and so did the limbs, but not showing that distinct area of demarcation which one generally observes. There was no history of strangles or fever previously. One could trace the history of this animal for three months before the onset of purpura. When examined, the temperature was only slightly raised. Sulphanilamide was given

and in a week all symptoms had gone. Was this a case of purpura? Clinically it certainly fitted in with the picture but the history seems to be all against it.

G. S. FORBES, M.R.C.V.S.

To the Editor, THE VETERINARY JOURNAL.

Nicotine Sulphate and Warble Fly

SIR,—I received an urgent call recently to attend some heifers which had just been dressed for warble fly and were taken seriously ill soon afterwards. On arrival at the farm I found two animals dead and three others in a state of collapse.

The owner stated he had dressed six heifers at about 8 a.m. with a proprietary warble-fly dressing and on going to turn them out to grass an hour later he found five of the animals down and unable to rise, two were in a state of complete collapse and died approximately 2½ hours after dressing.

I examined the remaining four animals and found three down, twitching, eyes and tongue protruding and very marked difficulty in breathing. The sixth heifer appeared little affected. The dressing was immediately washed off and stimulants administered and all recovered but were very weak for some days.

Post-mortem examination revealed nothing of importance.

Thirty cows were also dressed the night before without any ill effects.

The interesting point about the case is that the dressing consisted of 40 per cent. nicotine sulph. which was mixed with lime and water and smeared on the backs with a piece of cloth. The animals were very badly affected with warble fly nodules and the cause of death may have been from absorption through the skin. An article in the May publication of the *Veterinary Bulletin* gives support to this conclusion. This article, by Harley and French, reports rapid deaths in cattle in South Africa after spraying with nicotine sulph. as a tsetse fly repellent.

R. E. S. TUCKEY, M.R.V.C.S.

Whitchurch.

Ref.: See THE VETERINARY JOURNAL, Aug.-Sept., 1942, page 178.

To the Editor, THE VETERINARY JOURNAL.

Phlebotomy versus Neoplasms

SIR,—It would be of interest to know whether neoplasms are on the increase or not since the old-fashioned custom of phlebotomy in human beings in the spring of the year has been abandoned in this and other countries.

In Venezuela, the natives have a simple method of treating cattle in order to cure them of papillomata, commonly called warts and angleberries. These fibro-epithelial tumours are most prevalent in herds on the extensive ranches as well as on smallholdings throughout the Republic. In a tropical country such tumours attract all kinds of flies, thus the affected animals need constant attention. They are of different kinds and often grow to double the size of a man's hand. The procedure is so simple that one is apt, when the cowboy is seen for the first time performing this simple operation, to place it in the same category as the one in vogue there for destroying maggots (screw worms) on different animals by prayer, instead of applying a parasiticide.

XUM

The native cattle generally have very long horns which often have to be shortened by means of a hand-saw before being trooped towards the central markets. Naturally, bleeding occurs in proportion to the length of horn-pith removed. Within the course of several weeks after the removal of the horns, the animals which had previously been studded with papillomata were found to be free of such tumours, hence the discovery. The natives believe that bleeding from the horns and not from other parts of the body is essential. The writer, nevertheless, for many years in Venezuela, was able to put this to the test by bleeding such animals freely from other parts of the body such as the jugular vein, etc., with the same satisfactory results.

We have thus proved that depriving the already mentioned neoplasms of a considerable portion of blood supply, leads to atrophy and complete disappearance of such tumours in cattle, without a recurrence.

As blood transfusion is now practised on such an extensive scale, it should leave ample field for future observation so as to discover whether neoplasms, either malignant or benign, are less prevalent in donors of blood than in those who have not been deprived of any considerable quantity of blood.

EDWARD MORGAN, F.R.C.V.S., D.V.H.

Hayes, Kent.

INSTINCT ?

ONE often hears of animals, particularly dogs and cats, returning to their homes from great distances. In the *Sydney Daily Mirror*, of January 19, 1943, there is an interesting note, complete with picture, of a very nice-looking eleven hands 5-year-old pony. It appears that this pony was taken from a place called Rooty Hill to Upper Burragorang Valley, a distance of over seventy miles. A few weeks after his journey, he again appeared at his old home, none the worse for his escapade.

Horses in the wild state must travel many miles but in this case it is not the distance covered which is of such interest but the fact that by some instinct he was able to find his way to a particular spot.

Publishers' Notices

All communications should be addressed to 7 and 8, Henrietta Street, Covent Garden, London, W.C.2. Telephone: Temple Bar 8568. Telegrams: "Baillière Phone, London."

Letters for the Journal, literary contributions, reports, notices, books for review, exchanges, new instruments or materials, and all matter for publication (except advertisements) should be addressed to the Editor.

Copy of advertisements should be in the hands of the publishers—Baillière, Tindall and Cox—not later than the 1st of the month, if proof is required.

Binding Cases for Volume 98 and any other previous volumes can be obtained from the publishers. Price 3s. 9d. post free.

Annual Subscription, 25s. ($6.00 U.S.A. currency), post free.